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MANAGING HIGHWAY MAINTENANCE

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PART ONE: AREAS AND RATES OF APPLICATION

Table 1

ACREAGE — RIGHT-OF-WAY

Width In Feet	Length In Miles																		
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	2	3	4	5	6	7	8	9	10
1'	.0	.0	.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2
2'	.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.5	0.7	1.0	1.2	1.5	1.7	1.9	2.2	2.4
3'	.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.7	1.1	1.5	1.8	2.2	2.6	2.9	3.3	3.6
4'	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	1.0	1.5	1.9	2.4	2.9	3.4	3.9	4.4	4.9
5'	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.9	5.5	6.1
6'	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	1.5	2.2	2.9	3.6	4.4	5.1	5.8	6.5	7.3
7'	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.7	2.6	3.4	4.2	5.1	5.9	6.8	7.6	8.5
8'	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.9	2.9	3.9	4.9	5.8	6.8	7.8	8.7	9.7
9'	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0	1.1	2.2	3.3	4.4	5.5	6.5	7.6	8.7	9.8	10.9
10'	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2	2.4	3.6	4.9	6.1	7.3	8.5	9.7	10.9	12.1
20'	0.2	0.5	0.7	1.0	1.2	1.5	1.7	1.9	2.2	2.4	4.9	7.3	9.7	12.1	14.6	17.0	19.4	21.8	24.2
30'	0.4	0.7	1.1	1.5	1.8	2.2	2.6	2.9	3.3	3.6	7.3	10.9	14.6	18.2	21.8	25.5	29.1	32.7	36.4
40'	0.5	1.0	1.5	1.9	2.4	2.9	3.4	3.9	4.4	4.9	9.7	14.6	19.4	24.2	29.1	33.9	38.8	43.6	48.5
50'	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.9	5.5	6.1	12.1	18.2	24.2	30.3	36.4	42.4	48.5	54.6	60.6
60'	0.7	1.5	2.2	2.9	3.6	4.4	5.1	5.8	6.6	7.3	14.6	21.8	29.1	36.4	43.6	50.9	58.2	65.5	72.7
70'	0.9	1.7	2.6	3.4	4.2	5.1	5.9	6.8	7.6	8.5	17.0	25.5	33.9	42.4	50.9	59.4	67.9	76.4	84.9
80'	1.0	1.9	2.9	3.9	4.9	5.8	6.8	7.8	8.7	9.7	19.4	29.1	38.8	48.5	58.2	67.9	77.6	87.3	97.0
90'	1.1	2.2	3.3	4.4	5.5	6.6	7.6	8.7	9.8	10.9	21.8	32.7	43.6	54.6	65.5	76.4	87.3	98.2	109.1
100'	1.2	2.4	3.6	4.9	6.1	7.3	8.5	9.7	10.9	12.1	24.2	36.4	48.5	60.6	72.7	84.9	97.0	109.1	121.2

Table 2

ACREAGE — INTERCHANGE

Width In Feet	Length in Feet																		
	10	20	30	40	50	60	70	80	90	100	200	300	400	500	600	700	800	900	1000
10'	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
20'	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5
30'	.0	.0	.0	.0	.0	.0	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.6	0.7
40'	.0	.0	.0	.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.9
50'	.0	.0	.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.9	1.0	1.2
60'	.0	.0	.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.2	1.4
70'	.0	.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.5	1.6
80'	.0	.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	1.8
90'	.0	.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.6	0.8	1.0	1.2	1.5	1.7	1.9	2.1
100'	.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2.1	2.3
200'	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.9	1.4	1.8	2.3	2.8	3.2	3.7	4.1	4.6
300'	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.6	0.7	1.4	2.1	2.8	3.4	4.1	4.8	5.5	6.2	6.9
400'	0.1	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.9	1.8	2.8	3.7	4.6	5.5	6.4	7.4	8.3	9.3
500'	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.9	1.0	1.2	2.3	3.4	4.6	5.7	6.9	8.0	9.2	10.3	11.5
600'	0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.2	1.4	2.8	4.1	5.5	6.9	8.3	9.6	11.0	12.4	13.8
700'	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.5	1.6	3.2	4.8	6.4	8.0	9.6	11.3	12.9	14.5	16.1
800'	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	1.8	3.7	5.5	7.4	9.2	11.0	12.9	14.7	16.5	18.4
900'	0.2	0.4	0.6	0.8	1.0	1.2	1.5	1.7	1.9	2.1	4.1	6.2	8.3	10.3	12.4	14.5	16.5	18.6	20.7
1000'	0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2.1	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7	23.0

Table 3

SQUARE YARDS OF ROAD SURFACE FOR VARIOUS ROAD WIDTHS

Road Width	Square Yards of Road Surface		
	Per Lineal Foot	Per 100 Feet	Per Mile
6'	0.67	66.67	3,520
7'	0.78	77.78	4,107
8'	0.89	88.89	4,693
9'	1.00	100.00	5,280
10'	1.11	111.11	5,867
11'	1.22	122.22	6,453
12'	1.33	133.33	7,040
13'	1.44	144.44	7,627
14'	1.56	155.56	8,213
15'	1.67	166.67	8,800
16'	1.78	177.78	9,387
17'	1.89	188.89	9,973
18'	2.00	200.00	10,560
20'	2.22	222.22	11,733
22'	2.44	244.44	12,907

Road Width	Square Yards of Road Surface		
	Per Lineal Foot	Per 100 Feet	Per Mile
24'	2.67	266.67	14,080
25'	2.78	277.78	14,667
26'	2.89	288.89	15,253
28'	3.11	311.11	16,427
30'	3.33	333.33	17,600
32'	3.56	355.56	18,773
34'	3.78	377.78	19,947
36'	4.00	400.00	21,120
38'	4.22	422.22	22,293
40'	4.44	444.44	23,467
50'	5.56	555.56	29,333
60'	6.67	666.67	35,200
70'	7.78	777.78	41,067
75'	8.33	833.33	44,000
80'	8.89	888.89	46,933

Table 4

CIRCLES — LINEAL AND AREA MEASUREMENTS

Radius	Diameter	Circle Area	Circumference	Fillet Area
1.00	2.00	3.14	6.28	0.21
1.25	2.50	4.91	7.85	0.34
1.50	3.00	7.07	9.42	0.48
1.75	3.50	9.62	11.00	0.66
2.00	4.00	12.57	12.57	0.86
2.25	4.50	15.91	14.14	1.09
2.50	5.00	19.63	15.71	1.34
2.75	5.50	23.76	17.28	1.62
3.00	6.00	28.27	18.85	1.93
3.25	6.50	33.18	20.42	2.27
3.50	7.00	38.48	21.99	2.63
3.75	7.50	44.18	23.56	3.02
4.00	8.00	50.27	25.13	3.43
4.25	8.50	56.75	26.70	3.88
4.50	9.00	63.62	28.27	4.35
4.75	9.50	70.88	29.85	4.84
5.00	10.00	78.54	31.42	5.37
5.25	10.50	86.59	32.99	5.91

Radius	Diameter	Circle Area	Circumference	Fillet Area
5.50	11.00	95.03	34.56	6.49
5.75	11.50	103.87	36.13	7.09
6.00	12.00	113.10	37.70	7.73
6.25	12.50	122.72	39.27	8.38
6.50	13.00	132.73	40.84	9.07
6.75	13.50	143.14	42.41	9.78
7.00	14.00	153.94	43.98	10.52
7.25	14.50	165.13	45.55	11.28
7.50	15.00	176.72	47.12	12.07
7.75	15.50	188.69	48.69	12.89
8.00	16.00	201.06	50.27	13.73
8.25	16.50	213.83	51.84	14.61
8.50	17.00	226.98	53.41	15.50
8.75	17.50	240.53	54.98	16.43
9.00	18.00	254.47	56.55	17.38
9.25	18.50	268.80	58.12	18.36
9.50	19.00	283.53	59.69	19.37
9.75	19.50	298.65	61.26	20.40
10.00	20.00	314.16	62.83	21.46

Table 5

LINEAL FEET COVERED BY 1000-GALLON TANK

Road Width In Feet	Gallons Per Square Yard																
	0.10	0.15	0.20	0.25	0.30	0.33	0.35	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.25	1.50	2.00
8'	11,250	7,500	5,625	4,500	3,750	3,375	3,214	2,813	2,250	1,875	1,607	1,406	1,250	1,125	900	750	563
9'	10,000	6,667	5,000	4,000	3,333	3,000	2,857	2,500	2,000	1,667	1,429	1,250	1,111	1,000	800	667	500
10'	9,000	6,000	4,500	3,600	3,000	2,700	2,571	2,250	1,800	1,500	1,286	1,125	1,000	900	720	600	450
11'	8,182	5,455	4,091	3,273	2,727	2,455	2,338	2,045	1,636	1,364	1,169	1,023	909	818	655	545	409
12'	7,500	5,000	3,750	3,000	2,500	2,250	2,143	1,875	1,500	1,250	1,071	938	833	750	600	500	375
14'	6,429	4,286	3,214	2,571	2,143	1,929	1,837	1,607	1,286	1,071	918	804	714	643	514	429	321
15'	6,000	4,000	3,000	2,400	2,000	1,800	1,714	1,500	1,200	1,000	857	750	667	600	480	400	300
16'	5,625	3,750	2,813	2,250	1,875	1,688	1,607	1,406	1,125	938	804	703	625	*563	450	375	281
18'	5,000	3,333	2,500	2,000	1,667	1,500	1,429	1,250	1,000	833	714	625	556	500	400	333	250
20'	4,500	3,000	2,250	1,800	1,500	1,350	1,286	1,125	900	750	643	563	500	450	360	300	225
22'	4,091	2,727	2,045	1,636	1,364	1,227	1,169	1,023	818	682	584	511	455	409	327	273	205
24'	3,750	2,500	1,875	1,500	1,250	1,125	1,071	938	750	625	536	469	417	375	300	250	188
25'	3,600	2,400	1,800	1,440	1,200	1,080	1,029	900	720	600	514	450	400	360	288	240	180
26'	3,462	2,308	1,731	1,385	1,154	1,038	989	865	692	577	495	433	385	346	277	231	173
28'	3,214	2,143	1,607	1,286	1,071	964	918	804	643	536	459	402	357	321	257	214	161
30'	3,000	2,000	1,500	1,200	1,000	900	857	750	600	500	429	375	333	300	240	200	150

Table 6

GALLONS OF ASPHALT REQUIRED PER MILE FOR VARIOUS RATES OF APPLICATION

Road Width In Feet	Gallons Per Square Yard																
	0.10	0.15	0.20	0.25	0.30	0.33	0.35	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.25	1.50	2.00
8'	469	704	939	1173	1408	1564	1643	1877	2347	2816	3285	3755	4224	4693	5867	7040	9387
9'	528	792	1056	1320	1584	1760	1848	2112	2640	3168	3696	4224	4752	5280	6600	7920	10560
10'	587	880	1173	1467	1760	1956	2053	2347	2933	3520	4107	4693	5280	5867	7333	8880	11733
11'	645	968	1291	1613	1936	2151	2259	2581	3227	3872	4517	5163	5808	6453	8067	9680	12907
12'	704	1056	1408	1760	2112	2347	2464	2816	3520	4224	4928	5632	6336	7040	8800	10560	14080
14'	821	1232	1643	2053	2464	2738	2875	3285	4107	4928	5749	6571	7392	8213	10267	12320	16427
15'	880	1320	1760	2200	2640	2933	3080	3520	4400	5280	6160	7040	7920	8800	11000	13200	17600
16'	939	1408	1877	2347	2816	3129	3285	3755	4693	5632	6571	7509	8448	9387	11733	14080	18773
18'	1056	1584	2112	2640	3168	3520	3696	4224	5280	6336	7392	8448	9504	10560	13200	15840	21120
20'	1173	1760	2347	2933	3520	3911	4107	4693	5867	7040	8213	9387	10560	11733	14667	17600	23467
22'	1291	1936	2581	3227	3872	4302	4517	5163	6453	7744	9035	10325	11616	12907	16133	19360	25813
24'	1408	2112	2816	3520	4224	4693	4928	5632	7040	8448	9856	11264	12672	14080	17600	21120	28160
25'	1467	2200	2933	3667	4400	4889	5133	5867	7333	8800	10267	11733	13200	14667	18333	22000	29333
26'	1525	2288	3051	3813	4576	5084	5339	6101	7627	9152	10677	12203	13728	15253	19067	22880	30507
28'	1643	2464	3285	4107	4928	5476	5749	6571	8213	9856	11499	13141	14784	16427	20533	24640	32853
30'	1760	2640	3520	4400	5280	5867	6160	7040	8800	10560	12320	14080	15840	17600	22000	26400	35200

Table 7

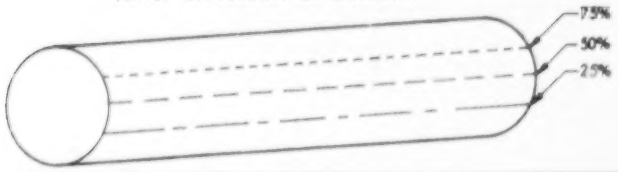
TONS OF AGGREGATE REQUIRED PER MILE FOR VARIOUS RATES OF APPLICATION

Width of Area in Feet	Pounds Per Square Yard														
	3#	5#	7#	8#	10#	12#	15#	20#	25#	30#	35#	40#	45#	50#	100#
8'	7.0	12	16	19	23	28	35	47	59	70	82	94	106	117	235
9'	7.9	13	18	21	26	32	40	53	66	79	92	106	119	132	264
10'	8.8	15	20	23	29	35	44	59	73	88	103	116	132	147	293
11'	9.7	16	23	26	32	39	48	65	81	97	113	129	145	161	323
12'	11	18	25	28	35	42	53	70	88	106	123	141	158	176	352
14'	12	20	29	33	41	49	62	82	103	123	144	164	185	205	410
15'	13	22	31	35	44	53	66	88	110	132	154	176	198	220	440
16'	14	23	33	38	47	56	70	94	117	140	164	188	211	235	469
18'	16	26	37	42	53	63	80	106	132	158	185	212	238	264	528
20'	18	29	41	47	59	70	88	118	147	176	205	235	264	293	587
22'	19	32	45	52	65	77	97	129	161	194	226	258	290	323	645
24'	21	35	49	56	70	84	105	141	176	212	246	282	317	352	704
25'	22	37	51	59	73	88	110	147	183	220	257	294	330	366	733
26'	23	38	53	61	76	92	114	152	191	228	267	305	343	381	762
28'	25	41	57	66	82	99	123	164	205	246	287	328	370	410	820
30'	26	44	62	70	88	106	132	176	220	264	308	352	396	440	880

PART TWO: VOLUMES AND WEIGHTS

Table 8

NUMBER OF GALLONS IN TANKS OF VARIOUS SIZES
(BASED ON PERCENT OF CAPACITY)



Percent of Depth	Percent of Capacity	Number of Gallons in Tank						
		600-Gallon Tank	800-Gallon Tank	1000-Gallon Tank	1200-Gallon Tank	1500-Gallon Tank	2000-Gallon Tank	2500-Gallon Tank
1	0.2	1	2	2	2	3	4	5
2	0.5	3	4	5	6	8	10	13
3	0.9	5	7	9	11	14	18	23
4	1.3	8	11	13	16	20	27	34
5	1.9	11	15	19	22	28	37	47
6	2.5	15	20	25	29	37	49	61
7	3.1	18	25	31	37	46	61	77
8	3.7	22	30	37	45	56	75	94
9	4.5	27	36	45	53	67	89	111
10	5.2	31	42	52	62	78	104	130
11	6.0	36	48	60	72	90	120	150
12	6.8	41	54	68	82	102	136	170
13	7.6	46	61	76	92	115	153	191
14	8.5	51	68	85	102	128	175	213
15	9.4	56	75	94	113	141	188	235
16	10.3	62	83	103	124	155	206	258
17	11.3	68	90	113	135	169	225	282
18	12.2	73	98	122	147	184	245	306
19	13.2	79	106	132	159	199	265	331
20	14.2	85	114	142	171	214	285	356

Table 8, continued

Percent of Depth	Percent of Capacity	Number of Gallons in Tank						
		600-Gallon Tank	800-Gallon Tank	1000-Gallon Tank	1200-Gallon Tank	1500-Gallon Tank	2000-Gallon Tank	2500-Gallon Tank
21	15.3	92	122	153	183	229	305	382
22	16.3	98	131	163	196	245	326	408
23	17.4	104	139	174	209	261	348	435
24	18.5	111	148	185	222	278	370	463
25	19.6	118	157	196	235	294	392	490
26	20.7	124	166	207	249	311	415	518
27	21.9	131	175	219	262	328	437	547
28	23.0	138	184	230	276	345	460	575
29	24.1	144	193	241	289	361	481	602
30	25.3	152	203	253	304	380	506	633
31	26.5	159	212	265	318	397	530	662
32	27.7	166	221	277	332	415	553	692
33	28.8	173	231	288	346	433	577	721
34	30.0	180	240	300	360	451	601	751
35	31.2	187	250	312	374	468	624	780
36	32.4	195	260	324	389	487	649	811
37	33.7	202	269	337	404	505	673	842
38	34.9	209	279	349	419	524	698	873
39	36.1	217	289	361	434	542	723	904
40	37.4	224	299	374	449	561	748	935
41	38.6	232	309	386	464	580	793	966
42	39.9	239	319	399	479	598	798	997
43	41.1	247	329	411	494	617	823	1029
44	42.4	254	339	424	509	636	848	1060
45	43.7	262	349	437	524	655	873	1092
46	44.9	270	359	449	539	674	898	1123
47	46.2	277	370	462	554	693	924	1155
48	47.5	285	380	475	569	712	949	1186
49	48.7	292	390	487	585	731	975	1218
50	50.0	300	400	500	600	750	1000	1250

Table 9

STORAGE CAPACITY (IN TONS) OF CONE- OR TENT-SHAPED STOCKPILES OF SAND OR GRAVEL

Length of Stockpile in Feet	Base Width (Diameter) in Feet													
	10	15	20	25	30	35	40	45	50	55	60	65	70	75
10	5													
12½	7	--												
15	10	17												
17½	12	22	--											
20	14	27	39											
22½	17	33	49	--										
25	19	38	58	77										
27½	21	43	68	92	--									
30	24	48	77	110	130									
32½	26	54	87	120	150	--								
35	28	59	96	140	180	210								
37½	31	64	110	150	200	240	--							
40	33	70	120	170	220	270	320							
42½	36	75	120	180	240	300	350	--						
45	38	80	130	200	260	330	390	450						
47½	40	86	140	210	280	360	430	500	--					
50	43	91	150	220	300	380	470	540	620					
52½	45	96	160	240	320	410	500	590	670	--				
55	47	100	170	250	340	440	540	640	730	820				
57½	50	110	180	270	370	470	580	690	790	890	--			
60	52	110	190	280	390	500	620	740	850	960	1100			
62½	54	120	200	300	410	530	650	780	910	1000	1100	--		
65	57	120	210	310	430	560	690	830	970	1150	1200	1400		
67½	59	130	220	330	450	590	730	880	1000	1200	1300	1500	--	
70	61	130	230	340	470	610	770	930	1100	1200	1400	1600	1700	
72½	64	140	240	360	490	640	800	970	1100	1300	1500	1700	1800	--
75	66	140	250	370	510	670	840	1000	1200	1400	1600	1800	1900	2100
	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	Base Width (Diameter) in Feet													
For each additional 10 feet beyond the 75-foot length in this table, add the following values.														
	9	21	38	59	85	115	150	190	235	285	340	400	460	530

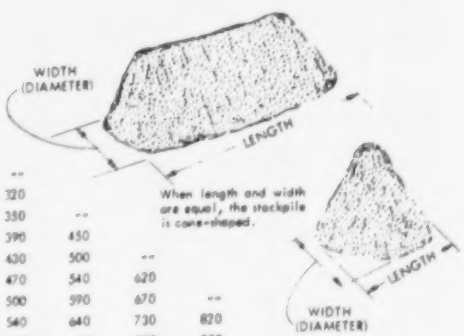


Table 10

STORAGE CAPACITY (IN TONS) OF CONE- OR TENT-SHAPED STOCKPILES OF CRUSHED STONE

Length of Stockpile in Feet	Base Width (Diameter) in Feet													
	10	15	20	25	30	35	40	45	50	55	60	65	70	75
10	5													
12½	8	--												
15	11	19												
17½	13	24	--											
20	16	30	44											
22½	19	36	54	--										
25	21	42	65	86										
27½	24	48	75	100	--									
30	26	54	86	120	150									
32½	29	60	96	130	170	--								
35	32	66	110	150	200	240								
37½	34	72	120	170	220	270	--							
40	37	78	130	180	240	300	350							
42½	40	83	140	200	270	330	390	--						
45	42	89	150	220	290	360	440	500						
47½	45	95	160	230	310	400	480	550	--					
50	47	100	170	250	340	430	520	610	690					
52½	50	110	180	270	360	460	560	660	750	--				
55	53	110	190	280	380	490	600	710	820	910				
57½	55	120	200	300	400	520	640	770	880	990	--			
60	58	120	210	320	430	560	690	820	950	1100	1200			
62½	61	130	220	330	450	590	730	870	1000	1200	1300	--		
65	63	140	230	350	480	620	770	920	1100	1200	1400	1500		
67½	66	140	240	360	500	650	800	980	1100	1300	1500	1600	--	
70	68	150	250	380	530	680	850	1000	1200	1400	1600	1700	1900	
72½	71	150	260	400	550	720	900	1100	1300	1500	1700	1800	2000	--
75	74	160	270	410	570	750	940	1100	1300	1500	1800	2000	2100	2300
	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	Base Width (Diameter) in Feet													

For each additional 10 feet beyond the 75-foot length in this table, add the following values.													
11	24	42	66	94	130	170	210	260	315	375	445	515	590

Table 11

LOOSE AND COMPACTED WEIGHTS OF VARIOUS MATERIALS

Type of Material	Loose			Compacted		
	Pounds Per Cubic Foot	Pounds Per Cubic Yard	Approximate Pounds Per Square Yard Per 1-Inch Depth	Pounds Per Cubic Foot	Pounds Per Cubic Yard	Approximate Pounds Per Square Yard Per 1-Inch Depth
Trap Rock	96	2590	72	122	3300	92
	100	2690	75	127	3420	95
	103	2780	77	131	3540	98
Granite or Limestone	90	2410	67	113	3060	85
	93	2500	69	118	3180	88
	96	2590	72	122	3300	92
Sandstone	82	2220	62	105	2830	79
	86	2320	64	109	2950	82
	90	2410	66	113	3060	85
	93	2500	70	118	3180	88
Sand	97	2630	73	105	2830	79
	101	2740	76	109	2950	82
	106	2850	79	113	3060	85
	110	2960	82	118	3180	88
Slag	55	1480	41	70	1890	53
	65	1760	49	83	2240	62
	76	2040	57	96	2590	72
	86	2320	64	109	2950	82
Asphalt Concrete	91	2480	69	115	3100	86
	100	2700	75	130	3510	97
	116	3130	87	145	3910	109
	128	3460	96	160	4320	120

Table 12

POUNDS OF AGGREGATE REQUIRED PER SQUARE YARD FOR VARIOUS CUBIC YARD WEIGHTS

Pounds of Aggregate Per Cubic Yard	Pounds of Compacted Aggregate Per Square Yard for Various Depths in Inches											
	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"
1800	50	100	150	200	250	300	350	400	450	500	550	600
1900	53	106	158	211	264	317	369	422	475	528	581	633
2000	56	111	167	222	278	333	389	444	500	556	611	667
2100	58	117	175	233	292	350	408	467	525	583	642	700
2200	61	122	183	244	306	367	428	489	550	611	672	733
2300	64	128	192	256	319	383	447	511	575	639	703	767
2400	67	133	200	267	333	400	467	533	600	667	733	800
2500	69	139	208	278	347	417	486	556	625	694	764	833
2600	72	144	217	289	361	433	506	578	650	722	794	867
2700	75	150	225	300	375	450	525	600	675	750	825	900
2800	78	156	233	311	389	467	544	622	700	778	856	933
2900	81	161	242	322	403	483	564	644	725	806	886	967
3000	83	167	250	333	417	500	583	667	750	833	917	1000
3100	86	172	258	344	431	517	603	689	775	861	947	1033
3200	89	178	267	356	444	533	622	711	800	889	978	1067
3300	92	183	275	367	458	550	642	733	825	917	1008	1100
3400	94	189	283	378	472	567	661	756	850	944	1039	1133
3500	97	194	292	389	486	583	681	778	875	972	1069	1167
3600	100	200	300	400	500	600	700	800	900	1000	1100	1200

Table 13

CUBIC YARDS OF MATERIAL REQUIRED PER 100 LINEAL FEET FOR VARIOUS LOOSE DEPTHS

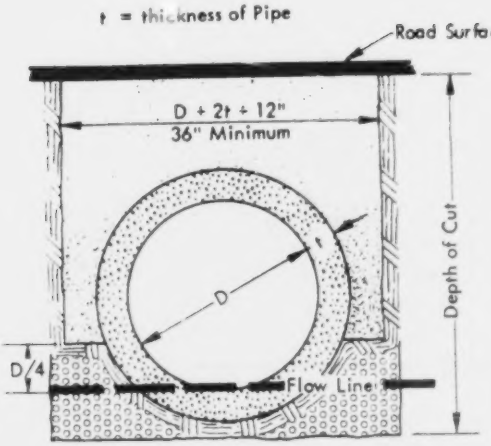
Width of Area in Feet	Cubic Yards of Loose Aggregate Required for Various Depths in Inches														
	1/2"	3/4"	1"	1½"	2"	2½"	3"	3½"	4"	4½"	5"	6"	8"	10"	12"
8'	1.2	1.9	2.5	3.7	4.9	6.2	7.4	8.6	9.9	11.1	12.3	14.8	19.8	24.7	29.6
9'	1.4	2.1	2.8	4.2	5.6	6.9	8.3	9.7	11.1	12.5	13.9	16.7	22.2	27.8	33.3
10'	1.5	2.3	3.1	4.6	6.2	7.7	9.3	10.8	12.3	13.9	15.4	18.5	24.7	30.9	37.0
11'	1.7	2.5	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3	17.0	20.4	27.2	34.0	40.7
12'	1.9	2.8	3.7	5.6	7.4	9.3	11.1	13.0	14.8	16.7	18.5	22.2	29.6	37.0	44.4
14'	2.2	3.2	4.3	6.5	8.6	10.8	13.0	15.1	17.3	19.4	21.6	25.9	34.6	43.2	51.9
15'	2.3	3.5	4.6	6.9	9.3	11.6	13.9	16.2	18.5	20.8	23.1	27.8	37.0	46.3	55.6
16'	2.5	3.7	4.9	7.4	9.9	12.3	14.8	17.3	19.8	22.2	24.7	29.7	39.5	49.4	59.3
18'	2.8	4.2	5.6	8.3	11.1	13.9	16.7	19.4	22.2	25.0	27.8	33.3	44.4	55.6	66.7
20'	3.1	4.6	6.2	9.3	12.3	15.4	18.5	21.6	24.7	27.8	30.9	37.0	49.4	61.7	74.1
22'	3.4	5.1	6.8	10.2	13.6	17.0	20.4	23.8	27.2	30.6	34.0	40.7	54.3	67.9	81.5
24'	3.7	5.6	7.4	11.1	14.8	18.5	22.2	25.9	29.6	33.3	37.0	44.4	59.3	74.1	88.9
25'	3.9	5.8	7.7	11.6	15.4	19.3	23.1	27.0	30.9	34.8	38.6	46.3	61.7	77.2	92.6
26'	4.0	6.0	8.0	12.0	16.0	20.1	24.1	28.1	32.1	36.1	40.1	48.1	64.2	80.2	96.3
28'	4.3	6.5	8.6	13.0	17.3	21.6	26.0	30.2	34.6	38.9	43.2	51.9	69.1	86.4	103.7
30'	4.6	6.9	9.3	13.9	18.6	23.1	27.8	32.4	37.0	41.7	46.3	55.6	74.1	92.6	111.1

Table 14

CUBIC YARDS OF MATERIAL REQUIRED PER FOOT FOR A TYPICAL CULVERT INSTALLATION

D = Diameter of Pipe

t = thickness of Pipe



Depth of Cut to Flow Line (In Feet)	D :	12"	15"	18"	24"	30"	36"	42"	48"
	t :	2"	2¼"	2½"	3"	3½"	4"	4½"	5"
2'		0.19	0.16	0.12	-	-	-	-	-
3'		0.32	0.29	0.25	0.23	0.18	-	-	-
4'		0.45	0.42	0.38	0.38	0.36	0.32	0.26	-
5'		0.59	0.56	0.52	0.54	0.54	0.53	0.49	0.42
6'		0.62	0.69	0.65	0.69	0.72	0.74	0.73	0.68
7'		0.85	0.82	0.78	0.85	0.90	0.95	0.96	0.94
8'		0.99	0.96	0.92	1.00	1.09	1.16	1.19	1.20
9'		1.12	1.09	1.05	1.16	1.27	1.36	1.43	1.46
10'		1.25	1.22	1.18	1.31	1.45	1.57	1.66	1.72
11'		1.39	1.36	1.32	1.47	1.63	1.78	1.90	1.98
12'		1.52	1.49	1.45	1.62	1.81	1.98	2.13	2.24

Table 15

NUMBER OF BOARD FEET PER LINEAL FOOT FOR VARIOUS SIZES OF LUMBER

Width In Inches	Thickness In Inches									
	2	4	5	6	7	8	9	10	12	14
4"	0.67	1.33	-	-	-	-	-	-	-	-
5"	0.83	1.67	-	-	-	-	-	-	-	-
6"	1.00	2.00	-	3.00	-	-	-	-	-	-
8"	1.33	2.67	-	4.00	-	5.33	-	-	-	-
10"	1.67	3.33	4.17	5.00	-	6.67	-	8.33	-	-
12"	2.00	4.00	5.00	6.00	-	8.00	9.00	-	12.00	-
13"	-	-	-	-	-	-	-	-	-	15.17
14"	2.33	4.67	5.83	7.00	8.17	9.33	-	-	14.00	16.33
16"	-	5.33	-	-	-	10.67	-	-	16.00	-
18"	-	-	-	-	-	12.00	13.50	-	18.00	-
20"	-	-	-	-	-	13.33	-	16.67	20.00	-
24"	-	-	-	-	-	16.00	-	-	24.00	-

PART THREE: CONVERSION FACTORS

Table 16

CONVERSION FACTORS — LENGTH MEASUREMENTS

To Convert	To	Multiply By
Inches	Feet	0.08
Inches	Yards	0.03
Feet	Inches	12
Feet	Yards	0.33
Feet	Rods	0.06
Yards	Inches	36
Yards	Feet	3
Yards	Rods	0.18
Rods	Inches	198
Rods	Feet	16.5
Rods	Yards	5.5
Miles	Feet	5,280
Miles	Yards	1,760
Miles	Rods	320

Table 17

CONVERSION FACTORS — AREA MEASUREMENTS

To Convert	To	Multiply By
Square Inches	Square Feet	0.007
Square Feet	Square Inches	144
Square Feet	Square Yards	0.11
Square Yards	Square Inches	1,296
Square Yards	Square Feet	9
Square Yards	Square Rods	0.03
Square Rods	Square Feet	272.25
Square Rods	Square Yards	30.25
Acres	Square Feet	43,560
Acres	Square Yards	4,840
Acres	Square Rods	160

Table 18

CONVERSION FACTORS — VOLUME MEASUREMENTS

To Convert	To	Multiply By
Cubic Feet	Cubic Inches	1,728
Cubic Feet	Cubic Yards	0.04
Cubic Feet	Gallons	7.48
Cubic Yards	Cubic Feet	27
Cubic Yards	Gallons	202
Quarts	Pints	2
Quarts	Gallons	0.25
Gallons	Pints	8
Gallons	Quarts	4
Gallons	Cubic Feet	0.13

Table 19

CONVERSION FACTORS – WEIGHTS AND OTHER MEASUREMENTS

To Convert	To	Multiply By
Ounces	Pounds	0.06
Pounds	Ounces	16
Tons (short)	Pounds	2,000
Tons (long)	Pounds	2,240
Miles/Hour	Feet/Minute	88
Miles/Hour	Feet/Second	1.47
Meters	Inches	39.37
Meters	Feet	3.28
Meters	Yards	1.09
Meters	Rods	0.20

Table 20

CONVERSION FACTORS - COMMON FRACTIONS TO DECIMAL NUMBERS

Fraction	Decimal Equivalent	Fraction	Decimal Equivalent	Fraction	Decimal Equivalent	Fraction	Decimal Equivalent
1/2	.5	1/7	.14	4/10	.4	11/12	.92
1/3	.33	2/7	.29	5/10	.5	1/16	.06
2/3	.67	3/7	.43	6/10	.6	2/16	.13
1/4	.25	4/7	.57	7/10	.7	3/16	.19
2/4	.5	5/7	.71	8/10	.8	4/16	.25
3/4	.75	6/7	.86	9/10	.9	5/16	.31
1/5	.2	1/8	.13	1/12	.08	6/16	.38
2/5	.4	2/8	.25	2/12	.17	7/16	.44
3/5	.6	3/8	.38	3/12	.25	8/16	.5
4/5	.8	4/8	.5	4/12	.33	9/16	.56
1/6	.17	5/8	.63	5/12	.42	10/16	.63
2/6	.33	6/8	.75	6/12	.5	11/16	.69
3/6	.5	7/8	.88	7/12	.58	12/16	.75
4/6	.67	1/10	.1	8/12	.67	13/16	.81
5/6	.83	2/10	.2	9/12	.75	14/16	.88
		3/10	.3	10/12	.83	15/16	.94

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MANAGING HIGHWAY MAINTENANCE

TWENTY MOST USED TABLES IN HIGHWAY MAINTENANCE

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